Industry Space Days – 17 September 2026
ERS-EO

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Agenda

14:30 – 14:40	10 min	**Overview of ERS-EO Programme**	Juliette Lambin
14:40 – 15:00	20 min	**ERS-EO Element 1 Downstream + Q&A**	Francesca Copillini
15:00 – 15:20	20 min	**ERS-EO Element 1 Upstream + Q&A**	Damien Galano
15:20 – 15:40	20 min	**ERS EO SRN + Q&A**	Hanna-Miina Sihvonen

Overview of ERS-EO Programme

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ESA programmes and geopolitical Shift

1. Europe needs to strengthen its security and resilience capabilities
2. Space plays a key role because of its dual use nature
3. ESA can support Member States & EU responses to the new situation

ESA mandated by its Member States

ERS Programmes

+

ESA-EU relations in preparation of EU space programme

EOGS **IRIS²** **LEO-PNT**

→

ERS initiative oversubscribed by MS Nov 2025

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EU-ESA: Building a coordinated response

- **Urgent need** for guaranteed & independent access to **critical space assets**
- **ESA and EU engaged in a strategic dialogue** to jointly address this shared priority
- **ESA Ministerial Conference** confirmed this first tangible step

A Coordinated & Interoperable System-of-systems

Secure Communications

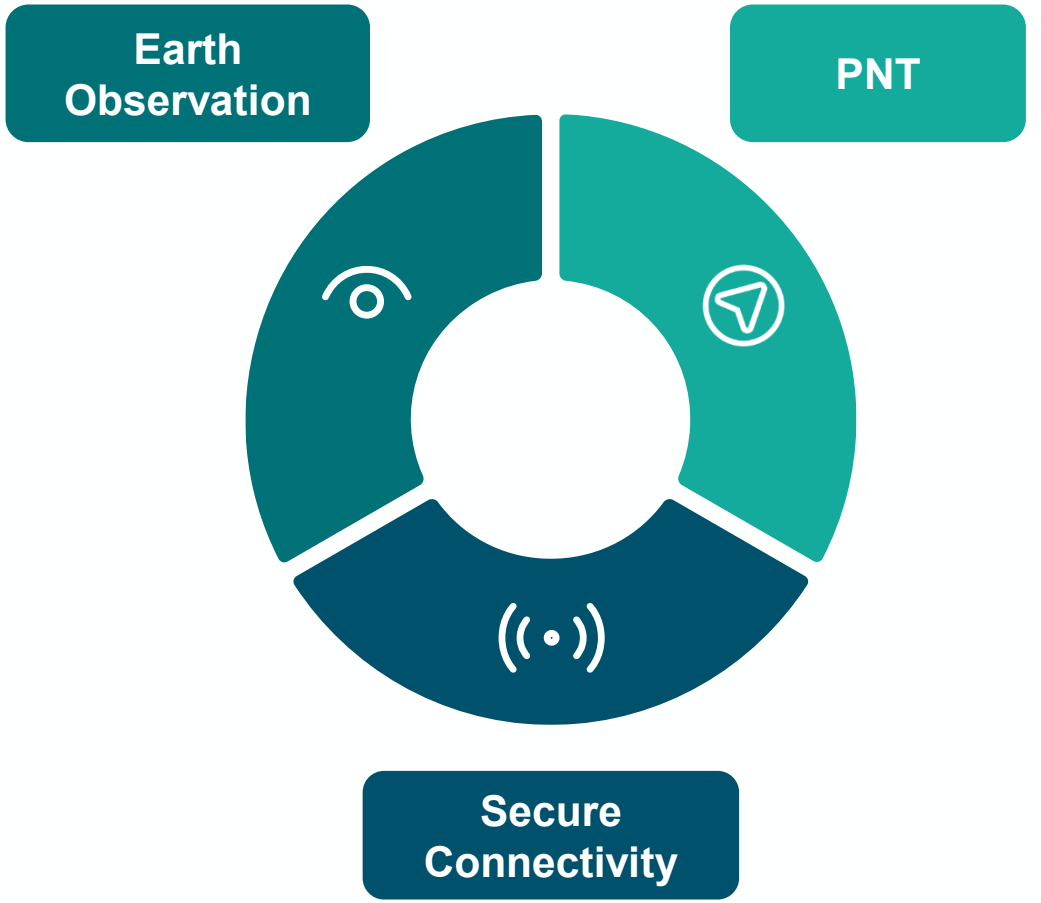
Earth Observation

Navigation

European Resilience from Space

→ An integrated system-of-systems to address critical gaps in Europe's strategic abilities

- Ambitious reactivity targets, secure data, and future-ready technologies
- Builds on Copernicus, Galileo, IRIS², LEO-PNT ESA missions, and national/commercial systems
- Integrates EO, connectivity, PNT, IoT, etc. for fast, secure response



The three pillars of ERS

Connect

Trusted Transport Layer with secure global communication links

At any time

From any location

Observe

Persistent

All-weather

Real-time

Rapid tasking

Frequent revisit

Low latency

Navigate

Resilient positioning resistant against:

Jamming

Spoofing

Interference

ERS-EO Programme in context

European Resilience From Space

Secure communications

- IRIS² Low-LEO
- HYDRON
- ARTES

Earth Observation

- ERS-EO Element 1
- ERS-EO Element 2

Navigation

- CELESTE *(LEO-PNT)*
- GALILEO

GSTP programs

GSTP Element 1: Develop

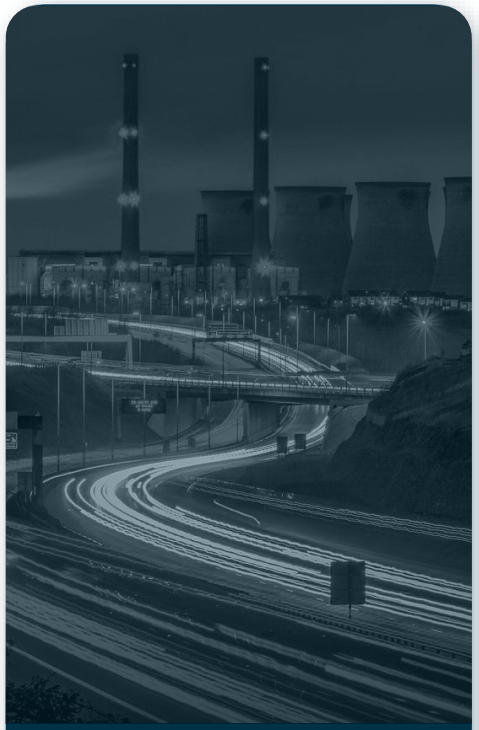
GSTP Element 2: Make

GSTP Element 3: Fly

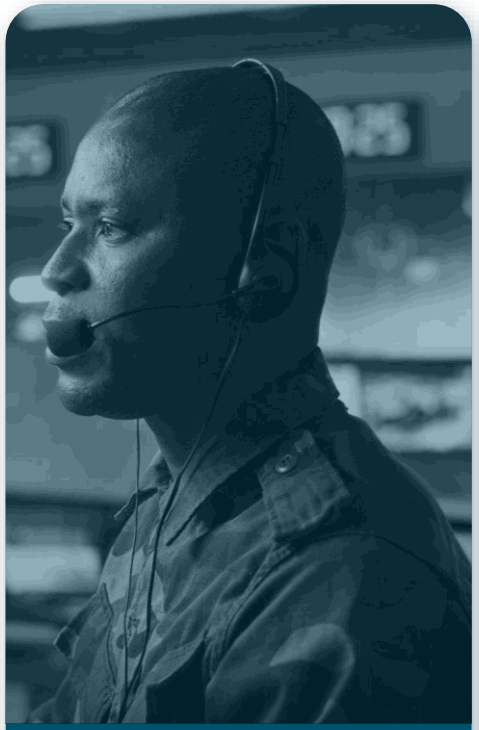
GSTP EEE Sovereignty

GSTP Resilience & Security

Various use cases…



Securing Europe Critical Infrastructures & Assets



Tactical support to military operations

Shaping Peace: Monitoring & Reconstruction

Environmental and Man-made Disasters Management

Surveillance to Counter Irregular Migration

ERS-EO Element 1 & 2

Earth Observation

ERS-EO Element 1 — 167* M€

**67M€ temporarily allocated to Phase 2 which will be open to subscriptions in May 2026 (for 250M€)*

Objective

Prepare and accelerate EU's EOGS, based on user needs and security requirements defined by European Commission

EOGS Architecture Design Studies *(EC funded)*	**Technology Development Activities**
End-to-End Performance Simulator Activity	**In-orbit Demonstration/Validation (IOD/IOV) Activities**
Space Segment Definition Activities (SAR & OPT)	**Testbed Architecture Definition Activity & Testbed Deployment and Evolution Activity**
Ground Segment Framework (GSF) Definition Activity	**Applications Proof-of-Concept Demonstration Activities**

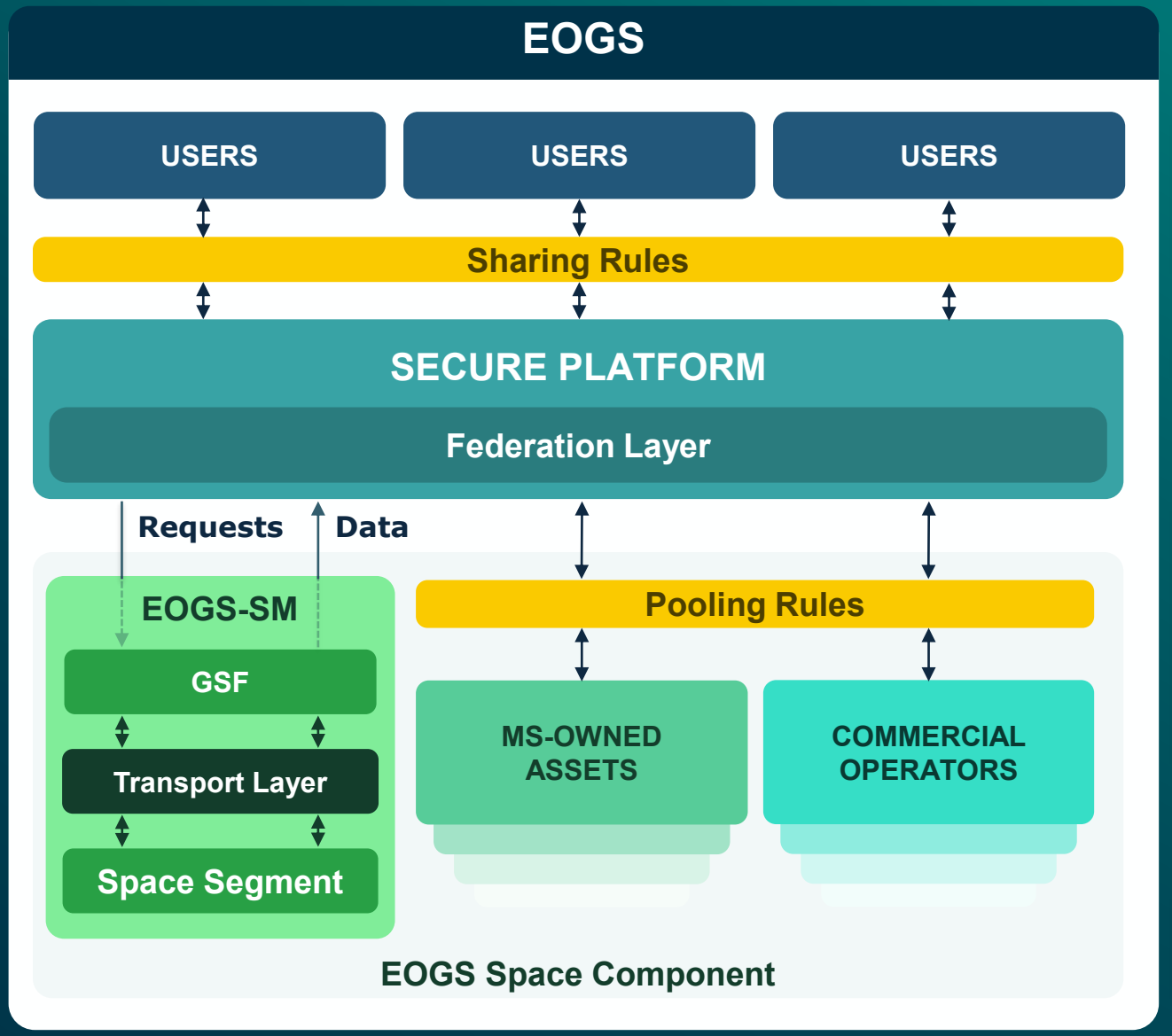
ERS-EO Element 2 — 491 M€

Objective

Scalable, adaptable solutions integrating national and multilateral resources

Federation of National Observation Capabilities Component	**30 M€**
Cluster 1 Alpstar	**24 M€**
Cluster 2 ECSA+	**325 M€**
Space Resilience Nodes	**112 M€**

EOGS architecture



EOGS = European Earth Observation Governmental Service

Provides secure, sovereign, high-reliability EO capabilities for Member States

Planned under 2028-2034 Multiannual Financial Framework

EOGS targets civil security and defence users

EOGS Secure Platform & Federation Layer

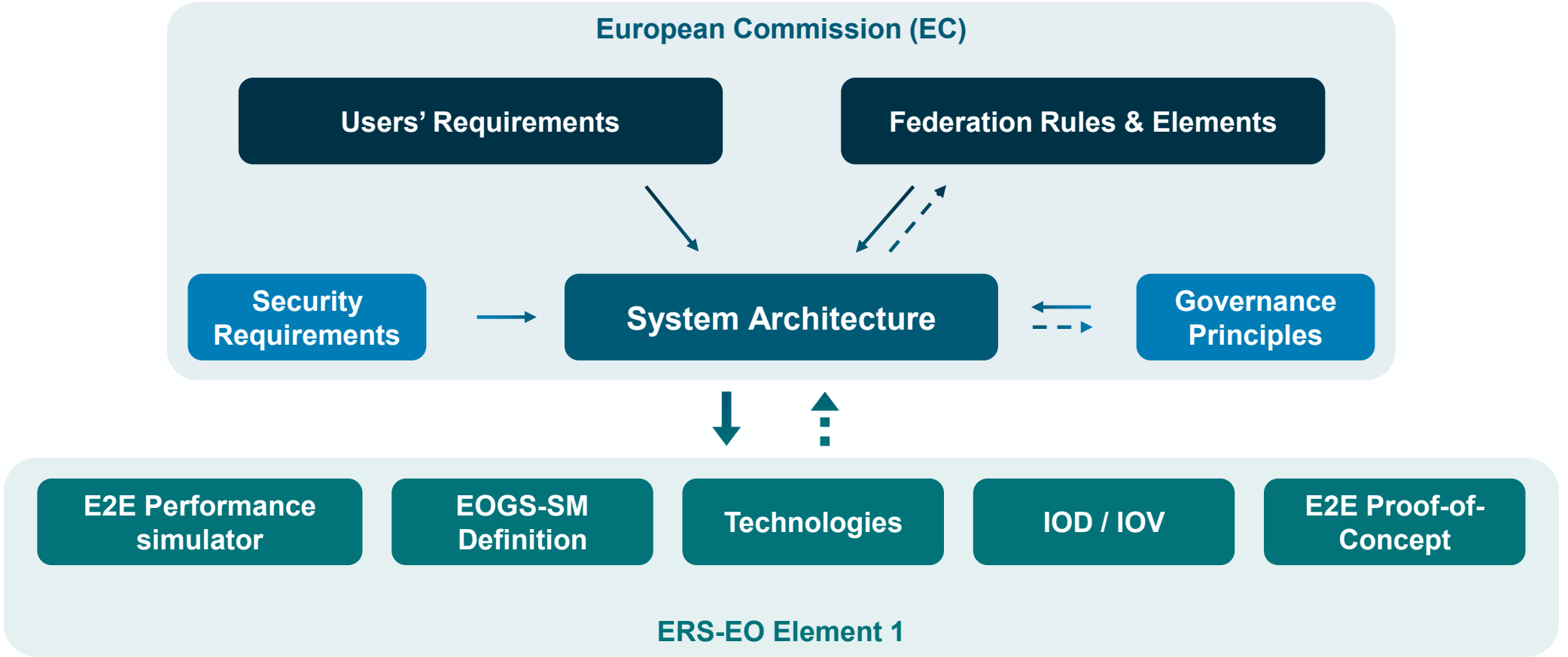
The secure platform will provide authorised users with access to task or retrieve SBEO missions' data from contributing and future dedicated EOGS Space Missions, obtain relevant geospatial-intelligence products, use data-processing and analysis tools, and securely distribute resulting data and information

EOGS-SM = EOGS Space Mission

Constellation owned by European Commission to complement existing capabilities

Element 1 Objectives

- Mature all critical components in preparation for the development of the EOGS system
- Prepare the technical, programmatic and security foundations



ERS-EO Element 1 Downstream

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EOGS-SM Ground Segment Framework Definition

Purpose

Define a secure, resilient and implementation-agnostic framework covering the ground segment functions required for the operations of the future EOGS Space Mission

INTERFACE WITH EOGS SECURE PLATFORM / FEDERATION LAYER

1 Mission Planning	2 Flight Operations	3 Data Generation & Management	4 Security Operations Coordination

INTERFACE WITH COMMUNICATION / TRUSTED TRANSPORT LAYER

INTERFACE WITH SPACE SEGMENT

Major output: PDR-ready package including overall GSF and security architecture, operational concepts, functional chains design, ICDs and development plans

➔ Open ITT intended for Q1 2027

ERS-EO Application Proofs of Concept (APoCs)

Purpose

Demonstrate and validate next-generation EO-enabled applications delivering tangible operational benefits, under representative conditions, preparing and accelerating the transition towards future EOGS-enabled applications.

How?

- In coordination with **EU Satellite Centre**
- Focuses on **realistic, high-value applications** (starting with critical-infrastructure monitoring)
- Covers **full workflows**, including data access, fusion, AI/ML processing, and information delivery

Industrial opportunities

- ➔ **Open ITT for Critical Infrastructure Monitoring Proof of Concept to be issued within September 2026**
- ➔ **Additional Proofs of Concept are planned to be launched by Q1 2027 to address thematic and regional demonstrations subject to availability of additional fundings in ERS-EO Element1**

ERS-EO Testbed

Application PoCs will be deployed and validated into a secure and scalable IT environment, the ERS-EO Testbed, ensuring a common framework for development, integration, demonstration and validation. Following a competitive ITT, negotiations with the selected Industrial Provider are currently ongoing.

ERS-EO Element 1 Upstream

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Consolidation of the overall System Architecture

EOGS Architecture Design Studies *(EC funded)*

- Define the EOGS **architecture**, functional elements and **major requirements**
- Assess existing **national/commercial capacities** and **identify gaps**
- Produce preliminary system concepts, security architecture, CONOPS and documentation (SRD, IRDs)
- Identify deployment strategy, cost ranges and programme risks

Two parallel studies kicked-off in September 2026

End-to-End Performance Simulator Activity

- Models the full tasking-to-delivery chain across space, ground and communications layers
- Supports architectural trade-offs and sensitivity analyses
- Provides quantitative **performance metrics** (coverage, timeliness, responsiveness)
- Supplies iterative versions aligned with the architecture and mission-definition activities

Development started in July 2026

Dual-Use Operational Scope
Multi-Sensor (e.g. VIS, NIR, TIR, SAR)
Agile Multi-Orbit Constellation: rapid tasking, low latency, and high revisit rates
Scalability, Resilience and Interoperability

EOGS Space Mission (EOGS-SM) Definition Activities

Space Segment Definition Activities

- Several parallel industrial contracts per thematic streams: two optical, two SAR TBC
- Mature candidate satellite designs to PDR level.
- Dual-sourcing to reduce dependency and increase resilience
- Assess design space, performance, critical technologies and implementation risks
- Ensure alignment with launcher compatibility, communications layer and security requirements

➔ **Open ITT intended for Q1 2027**

Space Segment sizing will be determined based on the results of the **gap analysis** with respect to other contributors, to achieve the EOGS performance requirements – including the end-to-end **system response time**

Development Activities

Technology Development Activities

- Mature critical EOGS-enabling technologies to TRL 6 by 2028
- Focus on technologies needed for EOGS in the very short term and compatible with a maximum of potential primes
- Coordinated tightly with Space and Ground Segment Definition activities

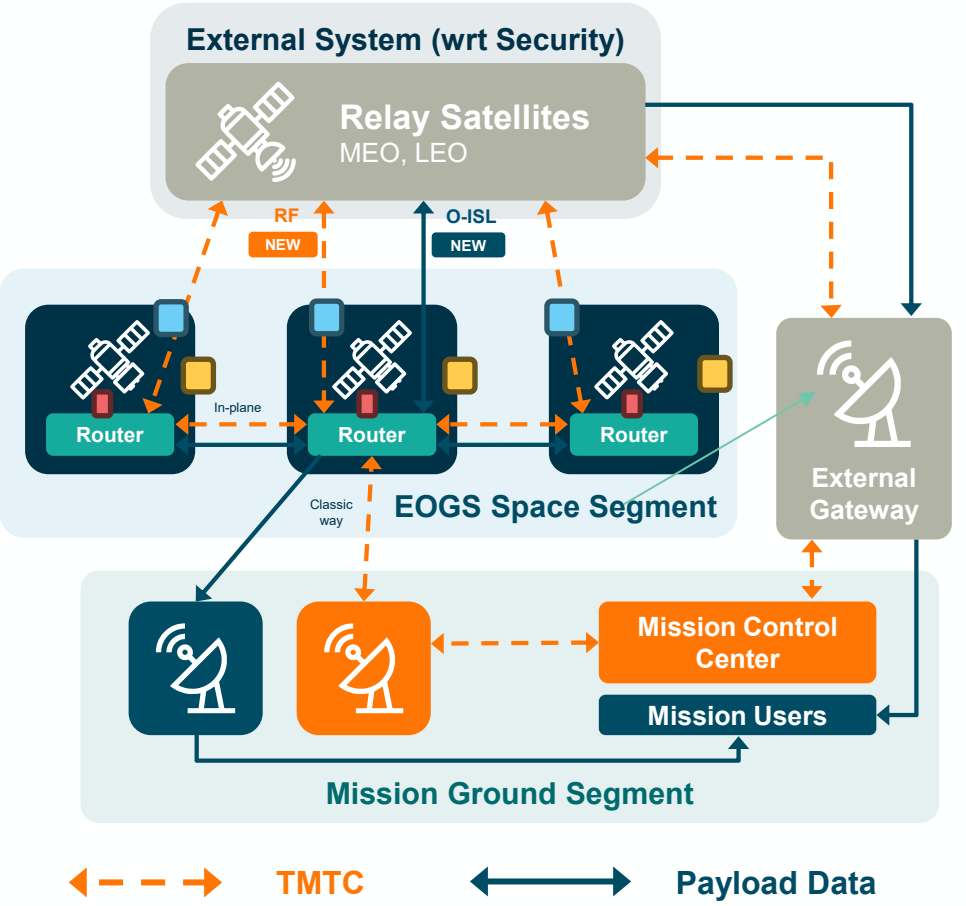
In-orbit Demonstration/Validation (IOD/IOV) Activities

- Early validation of priority technologies to de-risk major system choices
- Four themes identified through the 2025 RFI and system-gap analysis
- Launches targeted before November 2028

ERS EO Element 1 Technology Development Activities

Initiated activities

- TECH-DEV-A:
  Dynamic Satellite Tasking Payload
- TECH-DEV-B: Multi-Optical Terminal Commanding Unit
- TECH-DEV-C: Security Unit
- TECH-DEV-D: Resilient GNSS receiver



ERS-EO IOD/IOV Activities: Overview

IOD-A
Low Luminance / Night Vision

IOD-B
Dynamic Satellite Tasking

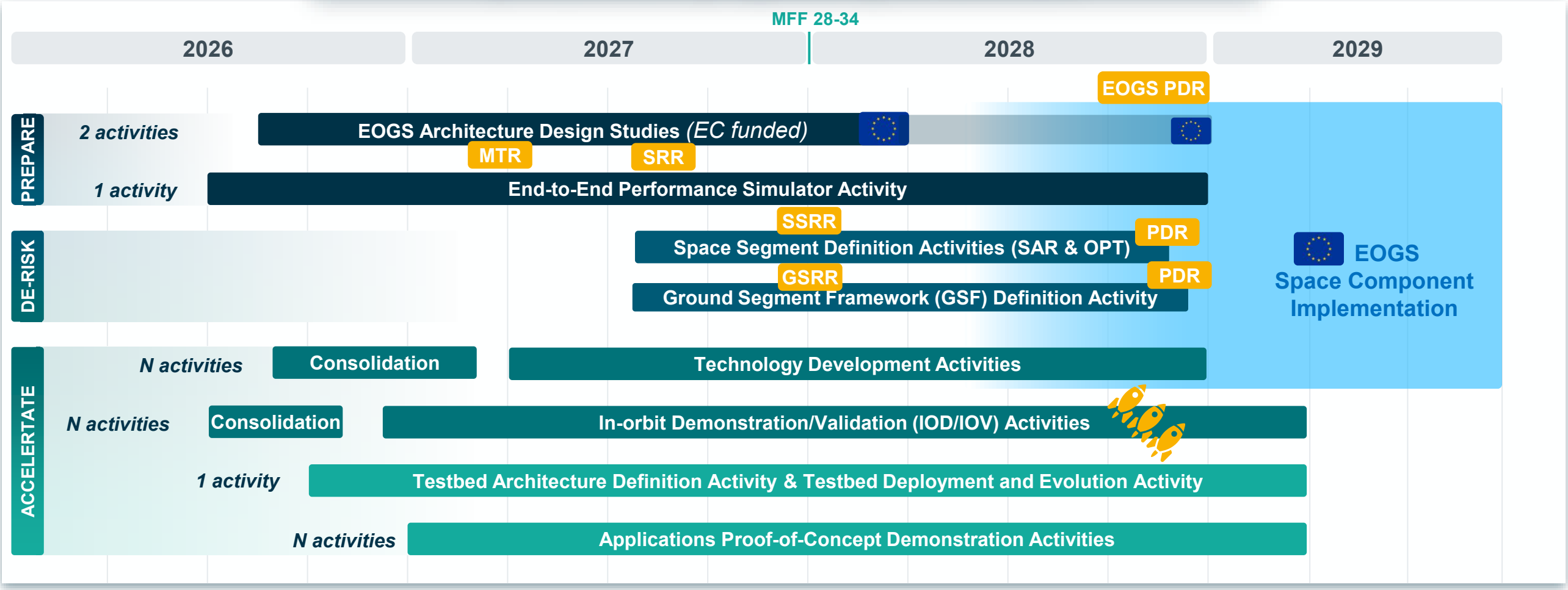
IOD-C
Reduced Information Age

IOD-D
Satellite Super Agility

12 projects under consolidation before confirmation for implementation

ERS-EO timeline (Element 1)

ERS-EO Element 1 activities & EC Architecture Studies procurement progressing on schedule



ERS-EO Space Resilience Nodes

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SPACE RESILIENCE NODES

From space assets to operational resilience

What SRNs are, what they offer, user benefits and opportunities for companies

USER-DRIVEN | SECURE BY DESIGN | FEDERATED

Earth Observation Programmes Directorate | August 2026

The problem is not a lack of technology

Space-enabled data and services are fragmented across providers, access models and user interfaces.

1. **DISCOVER**
   Users must find the right service quickly.

2. **ACCESS**
   Different procurement, licences and restrictions slow use.

3. **INTEGRATE**
   Products rarely enter operational systems seamlessly.

4. **TRUST**
   Security, provenance and service assurance must be clear.

SRNs organise this complexity around the mission need, not around individual technologies.

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A user segment that turns capabilities into missions

A national, user-driven service environment combining digital, physical and human components to enable rapid access to space-enabled solutions for Public Protection and Disaster Relief.

01

DIGITAL

Marketplace
Mission templates
Data and analytics
APIs and dashboards

02

PHYSICAL

Satellites and ground assets
Secure connectivity
Sensors, drones and IoT
National infrastructure

03

HUMAN

Operational users
Service providers
Node operators
Governance and support

The node is not just a portal. It connects services, data, people and operational processes into a usable whole.

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Four mission outcomes, one integrated environment

01 Risk assessment & simulation

Combine satellite, terrain, meteorological and local data to model hazards and likely impacts.

02 Early warning & alerts

Turn observations and forecasts into timely warnings for operational teams.

03 Situational awareness

Fuse satellite, drone, sensor and national data into an actionable operating picture.

04 Coordination & communications

Support resilient information exchange, positioning and mission-critical connectivity.

Applicable across wildfires, floods, maritime incidents, infrastructure disruption and other nationally prioritised hazards.

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From an urgent need to an actionable result

1

MISSION NEED

Hazard, area, time, priority and constraints

2

CONFIGURE

Select a mission template and required outcomes

3

MATCH

Discover and book suitable data, services and algorithms

4

FUSE

Integrate space, national and local data

5

DELIVER

Provide alerts, maps, analytics or connectivity in the user workflow

Security by design • Integration and user support • Auditability • Closed-loop feedback

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A practical baseline that can be tailored nationally

Mission templates & configurators
Plan and bundle products around a defined event or mission.

Digital smart marketplace
Access a catalogue of vetted data, services and AI capabilities.

User dashboard & interaction
Track mission progress, availability, access and outputs.

Integration & user support
Connect APIs, legacy systems and operational environments.

Security by design
Apply access controls, governance and assurance throughout.

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Benefits measured in operational usefulness

FASTER ACCESS

One place to discover, request and use diverse institutional and commercial capabilities.

EASIER TO USE

Mission templates and assistance make advanced services usable by non-space experts.

BETTER INTEGRATED

Outputs can enter existing workflows, legacy systems and national data environments.

MORE RESILIENT

Multiple sources and cross-node sharing can improve coverage, redundancy and continuity.

MORE CONTROL

National priorities, permissions, security requirements and governance remain explicit.

LESS DUPLICATION

Reusable components and pooled capabilities reduce the need to build everything nationally.

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National nodes, connected when value and trust align

What the network enables

1. Pooling and sharing of authorised products and services
2. Enhanced geographical coverage and access to specialised capabilities
3. Redundancy and alternatives when one source is unavailable
4. Common interfaces supporting interoperability between nodes
5. National control through agreed permissions, security rules and priorities

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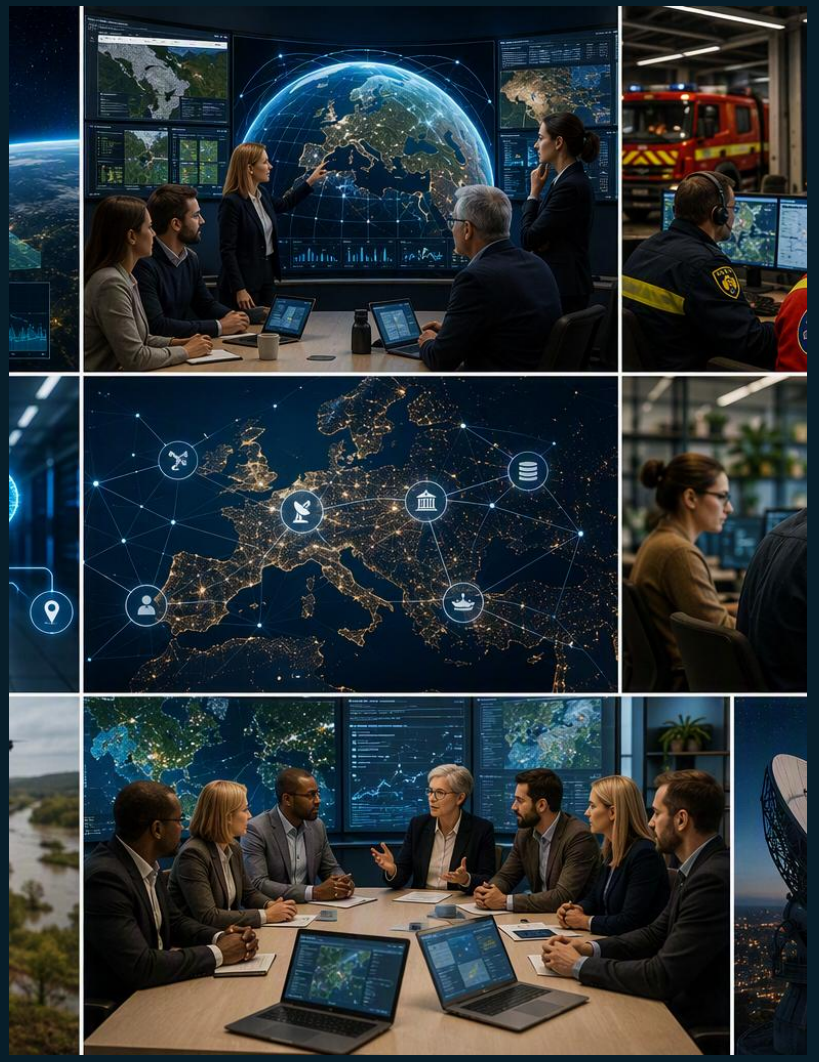
Companies can contribute across the SRN value chain



SPACE & SENSOR PRODUCTS

EO, Satcom, PNT, weather, IoT, drone and other data or service products.

ANALYTICS & AI

Models, algorithms, data fusion, simulation, alerting and decision-support tools.

PLATFORM COMPONENTS

Marketplaces, catalogues, mission configurators, dashboards, access control and transaction services.

INTEGRATION & CYBERSECURITY

APIs, legacy-system integration, secure cloud/edge, identity, auditability and service assurance.

OPERATIONS & USER SUPPORT

Training, capacity building, service operations, product validation and user assistance.

Design principle: interoperable, secure, reusable and demonstrably useful in operational contexts.

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Engagement starts with needs and matures through evidence

1

UNDERSTAND

Engage with national user needs, priority hazards, operational workflows and legacy systems.

2

POSITION

Map the company offer to a mission outcome or a reusable SRN component.

3

PREPARE

Describe interfaces, security, service levels, licensing, portability and integration effort.

4

DEMONSTRATE

Validate with users in realistic workflows and capture operational feedback.

5

SCALE

Package as a catalogue product or reusable component that can serve more than one node.

Monitor ESA procurement announcements for user-needs studies, node development and innovative products.

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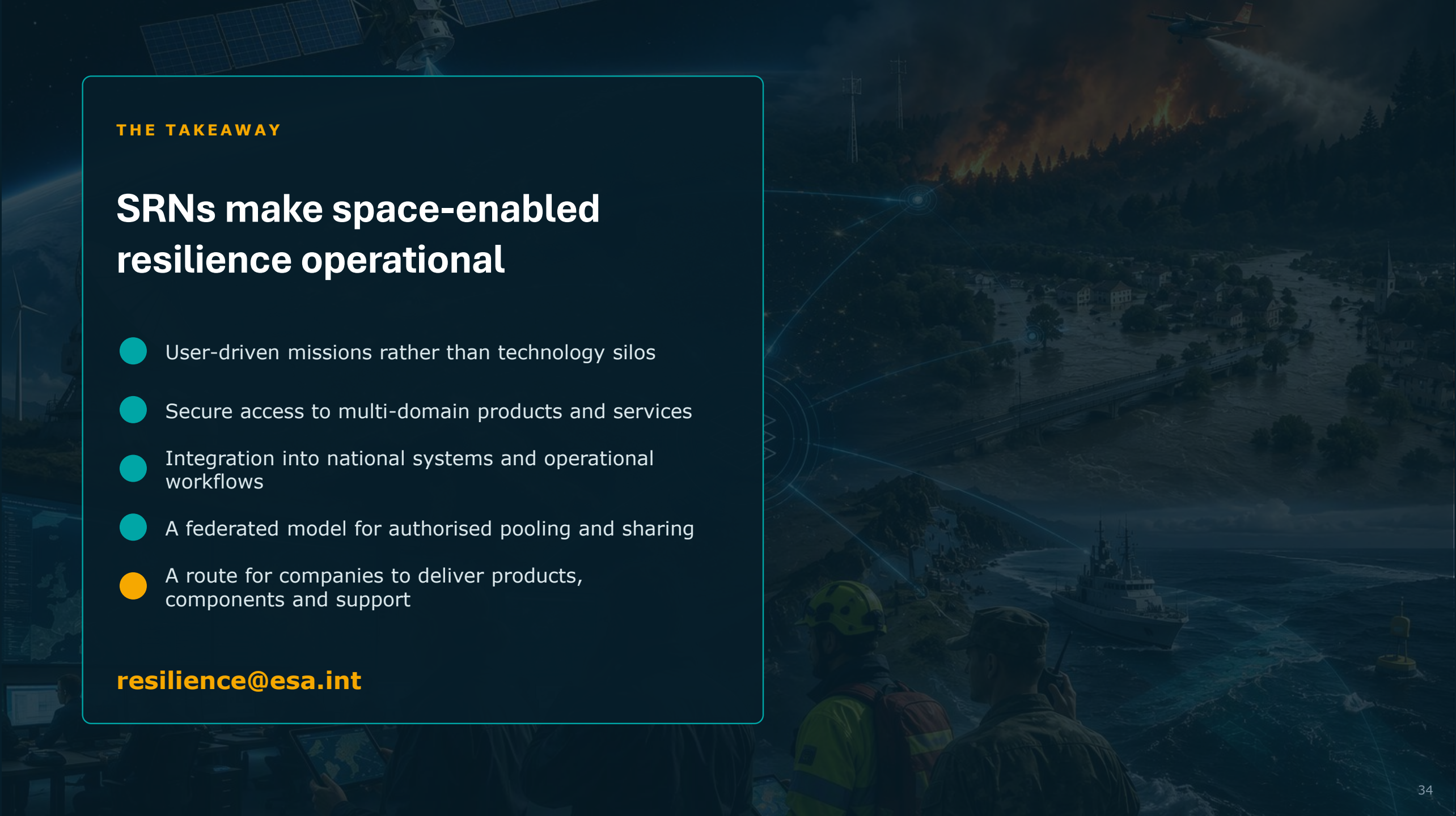

THE TAKEAWAY

SRNs make space-enabled resilience operational

- User-driven missions rather than technology silos
- Secure access to multi-domain products and services
- Integration into national systems and operational workflows
- A federated model for authorised pooling and sharing
- A route for companies to deliver products, components and support

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